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RESEARCH ARTICLE

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Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 9

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Abstract

In this contribution, new data concerning bryophytes, fungi, and lichens of the Italian flora are presented. It includes new records and confirmations for the bryophyte genera *Encalypta*, *Grimmia*, and *Riccia*, for the fungal genera *Hericium*, *Inocybe*, *Inocutis*, *Pluteus*, and *Russula*, and for the lichen genera *Bryoria*, *Farnoldia*, *Hypocenomyce*, *Lecania*, *Paracollema, Peltigera*, *Sarcogyne*, and *Teloschistes*.

Keywords

Ascomycota, Basidiomycota, Bryidae, Jungermanniidae, Marchantiidae

How to contribute

The text of the records should be submitted electronically to: Cecilia Totti (c.totti@univpm.it) for algae, Marta Puglisi (mpuglisi@unict.it) for bryophytes, Alfredo Vizzini (alfredo.vizzini@unito.it) for fungi, Sonia Ravera (sonia.ravera@unipa.it) for lichens.

Floristic records

Bryophytes

***Encalypta ciliata* Hedw. (Encalyptaceae)**

+ **VEN**: Il Castello, Livinallongo Val di Lana (Belluno) on rock in wet slit (UTM WGS84 32T 724444.5153886), 1720 m, 21 August 2016, *F. Sguazzin* (Bryophytorum Herbarium F. Sguazzin). – Species confirmed for the flora of Veneto.

Encalypta ciliata is a Circumpolar Boreal-montane floristic element (Dierßen 2001), recorded for several countries of the Mediterranean basin (Ros et al. 2013), but its range is subcosmopolitan (Smith 2004). According to Aleffi et al. (2008), this species is known in Italy for many Administrative Regions, including Veneto, where the records have not been confirmed over the last 50 years. According to Hodgetts (2015), *E. ciliata* is considered Endangered (EN) in Estonia; Vulnerable (VU) in Czech Republic, Hungary, Montenegro and Serbia; Critically Endangered (CR) in Ireland and Luxembourg; Data Deficient (DD) in Sardinia; Near Threatened (NT) in Sicily and Not Evaluated (NE) in Italy.

S. Poponessi, F. Sguazzin, M. Aleffi

***Grimmia elongata* Kaulf. (Grimmiaceae)**

+ **EMR**: Monte Prado, Tuscan-Emilian Apennine National Park, Villa Minozzo (Reggio Emilia), on rocks (UTM WGS84: 32T 612458.4900639), 2095 m, 23 July 2018, *S. Poponessi* (PERU). – Species new for the flora of Emilia-Romagna.

Grimmia elongata is a Circumpolar Arctic-montane species with main distribution in the mountain areas of Europe, while it is very rare in southern Europe and in the Mediterranean countries (Ros et al. 2013; Hodgetts 2015). It is also known for North America, North Africa, and Asia (Muñoz and Pando 2000; Greven 2003; Ignatova and Muñoz 2004; Manju and Rajesh 2011). *Grimmia elongata* is a cryophytic, acidophytic species preferably growing on acidic sandstones, rocks and rocky crevices, north-facing outcrops and ledges. It is closely related to *Grimma donniana* Sm., from which it is distinguished for the reddish-brown colour of the cushions, muticous or short-awned leaves with only one margin recurved and dioecious sexuality. According to Aleffi et al. (2008), the species is known in Italy for Val d'Aosta, Piemonte, Lombardia, Trentino-Alto Adige, Campania, and Sicilia.

S. Poponessi, M. Puglisi

***Riccia beyrichiana* Hampe ex Lehm. (Ricciaceae)**

+ **TOS**: Poggio alle Monache, Chiesanuova (Firenze), on wet paths in Mediterranean maquis (UTM 32T 676341.4842470), 224 m, 8 June 2019, *G. Pandeli* (SI); Collegramole Case Nuove Impruneta (Firenze), on soil in maquis with *Erica arborea* L. and *Arbutus unedo* L., (UTM WGS84 32T 676963.4842320), 198 m, 10 April 2017, *G. Pandeli* (SIENA); Poggio Valicaia Casignano Scandicci (Firenze), on wet paths in Mediterranean maquis (UTM WGS84 32T 637816.4983201), 360 m, 15 September 2019, *G. Pandeli* (SIENA). – Species new for the flora of Toscana.

Riccia beyrichiana grows on acidic soils and rocks in Mediterranean forests, on cliff tops, in wetlands and grasslands in exposed sites sometimes subjected to seasonal flooding. It is distinguished from the other species of *Riccia* for its large, channelled, long-persistent, shiny thallus with swollen margins. In Italy, it is reported for Piemonte, Lombardia, Trentino-Alto Adige, Umbria, Puglia, and Sardegna (Aleffi et al. 2008) and recently for Campania (Puglisi et al. 2015a, 2015b). Its global range includes Europe, SE Asia, N Africa, and N America (Ozenoglu Kiremit et al. 2016).

G. Pandeli, I. Bonini, M. Aleffi

Fungi

***Hericium erinaceus* (Bull.) Pers. (Hericiaceae)**

+ **CAM**: Real Bosco di Capodimonte (Napoli), on living stem of *Quercus ilex* L. (UTM WGS 84: 33T 437027.4524498) 147 m, 28 November 2019, *M. Marziano* (NAP). – Species new for the flora of Campania.

Hericium erinaceus is considered as rare in Italy and is reported in the Red List as Endangered (Rossi et al. 2013), while it is widespread in America and Asia (Ginns 1985). Two specimens were found on the wounds of different stems of a living tree of *Quercus ilex* L. in a holm oaks forest in a historic royal park. This saprotrophic fungus produces white rot on living trees (Boddy et al. 2011). In Italy, it is known for Calabria (Siniscalco et al. 2018), Toscana (Corana et al. 2019), Sardegna, Emilia-Romagna, and Piemonte (Bernicchia and Padovan 1997). Other congener species found in Italy are *H. coralloides* (Scop.) Pers., *H. alpestre* Pers., and *H. cirrhatum* (Pers.) Nikol. (Saitta et al. 2011).

M. Marziano, C. Guarino

***Inocybe pelargonium* Kühner (Inocybaceae)**

+ **LIG**: near Via S. Lorenzo di Casanova, Geminiano (Genova), on calcareous soil with *Quercus ilex* L., (UTM WGS 84: 32T 494157.4922117), 375 m, 19 October 2015, *F. Boccardo* (Herb. GDOR 3715). – Species new for the flora of Liguria.

Inocybe pelargonium is associated mainly with *Picea abies* (L.) H.Karst, *Fagus sylvatica* L. or *Quercus* L. (Bandini et al. 2019). *Inocybe pelargonium* is recognized by having strikingly distinctive characters: coppery-brownish, coppery-ochraceous to orange colours on pileus, typical smell like *Pelargonium* leaves or sweet fruits, when cut subspermatic, small spores (5.8–10.0 × 3.9–5.7 µm), and relatively short cystidia (28–65 µm) variable in shape, from sub-utriform, sub-fusiform to sub-clavate, generally crystalliferous at apex (Bandini et al. 2019).

F. Dovana, F. Boccardo

***Inocutis levis* (P.Karst.) Y.C.Dai (Hymenochaetaceae)**

+ **ITALY** (**CAL**): Orto Botanico Università della Calabria, Rende (Cosenza), on the stem of 30-year-old declining poplar trees (*Populus nigra* and *Populus nigra* subsp. *italica*) (UTM WGS84: 33S 605990.4357046), 220 m, 11 October 2018, *G. Sicoli*, *G. Aloise*, *N.G. Passalacqua* (CLU No. F304). – Species new for the flora of Italy (Calabria).

Inocutis levis is a lignicolous fungus, showing sessile and pileate basidiomata, and a distinct granular core at the point of attachment to the plant tissues (Dai 2010). The maximum size we detected were 60 cm in width, 40 cm in projection, 4 and 10 cm in context and hymenial thickness, respectively. Spores are ellipsoid, yellowish and thick-walled, very similar to those produced by *Inocutis tamaricis* (Pat.) Fiasson & Niemelä, but differing from these because they remain cyanophilous even at maturity (Dai 2010; Sicoli and Mannarino 2017). The molecular comparison (nITS rDNA sequence) of our specimen with those available in GenBank (Boudagga et al. 2017; Hashemi et al. 2017) confirmed the identification. As far as we know, and despite a number of records for Asia and Africa (Karsten 1887; Salem and Michail 1980; Dai 2010; Ţura et al. 2010; Boudagga et al. 2017; Hashemi et al. 2017), no indication of this species for Europe has been reported, so far.

G. Sicoli, G. Aloise, N.G. Passalacqua

***Pluteus semibulbosus* (Lasch) Quél. (Pluteaceae)**

+ **CAL**: Botanical Garden, University of Calabria, Rende (Cosenza), on a dead branch laying on the ground, reasonably belonging to *Quercus pubescens* Willd. (UTM WGS84: 33S 605956.4357271), 220 m, 14 October 2019, *G. Sicoli*, *A.B. De Giuseppe*, *N.G. Passalacqua* (CLU No. F309). – Species new for the flora of Calabria.

Pluteus semibulbosus is an agaricoid, lignicolous, saprotrophic fungus, showing pileate and stipitate basidiomata. The pileus, less than 3.0 cm in diameter, shows a whitish-cream to pale-skin translucent cuticle, darker in the centre, striate towards the margin. The stipe is central, white, cylindrical and more or less bulbous at the base, thus differing from the close *Pluteus plautus* (Weinm.) Gillet, which lacks the bulb. Caulocystidia are characteristically cylindrical to broadly clavate to broadly fusiform, whereas they are broadly clavate to pyriform or even ventricose in *P. plautus*. Moreover, pleurocystidia are broadly lageniform in contrast with the conical-fusiform, narrowly utriform to cylindrical pleurocystidia occurring in another close species, *Pluteus inquilinus* Romagn. (Kaigusuz et al. 2019).

G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua

***Russula nympharum* F.Hampe & Marxm. (Russulaceae)**

+ **ITALY** (**LIG**): Portofino Vetta (Genova), in *Quercus ilex* L. forest (UTM WGS84: 32T 513144.4908678), 30 October 2009, *R. Jon* (R Jon 0482); San Martino di Noceto (Genova), (UTM WGS84: 32T 513756.4911561), *Quercus* sp., 30 October 2009, *R. Jon* (R Jon 0483). – Species new for the flora of Italy (Liguria).

+ **ITALY** (**MAR**): Serrina S of Carpegna (Urbino), in *Quercus cerris* L. forest, (UTM WGS84: 33T 285363.4849414), 16 October 2004, leg. *A. Storgaard*, rev. *M. Vaneková* (C-F-91172). – Species new for the flora of Italy (Marche).

+ **ITALY** (**PIE**): Masserano (Biella), (UTM WGS84: 32T 439663.5049156), *Quercus* sp., 15 November 2009, *R. Jon* (R Jon 0501). – Species new for the flora of Italy (Piemonte)

+ **ITALY** (**TOS**): Marsiliana, Riserva Statale (Grosseto), forest with *Quercus suber* L. and *Q. ilex*, (UTM WGS84: 32T 646434.4763924), 8 November 2016, *L. Michelin* (SAV F-4887); 2 km SE of of the village, Frassine, Monterotondo Marittimo (Grosseto), forest with *Q. ilex* and *Q. cerris*, (UTM WGS84: 32T 646194.4775121), 10 November 2016, *M. Caboň* (SAV F-4992). – Species new for the flora of Italy (Toscana).

The original description of *Russula nympharum* (Adamčík et al. 2016) was based on four collections originating from France, Spain, and Belgium. This species is distinguished from its look-alike *Russula maculata* Quél. by lower spore ornamentation not exceeding 0.6 µm, more abundant pleurocystidia, mostly cylindrical terminal cells in pileipellis and broader, clavate pileocystidia near the pileus margin, on average wider than 7 µm. Our collections represent the first reports of *R. nympharum* from Italy. According to morphological and molecular (nITS rDNA) analysis of recently collected herbarium specimens, we identified five collections of *R. nympharum* originating from

four Italian Regions. The studied collections are deposited in the herbarium of the Slovak Academy of Sciences (SAV) and in the Copenhagen Herbarium (C).

M. Caboň, S. Adamčík, R. Jon

Lichens

Bryoria furcellata (Fr.) Brodo & D.Hawksw. (Parmeliaceae)

+ **TAA**: Valle Aurina, tourist path 700 m N of Casere fraz. di Predoi (Bolzano), on bark of *Larix decidua* Mill. (UTM WGS84: 33T 281783.5215413), 1900 m, 19 July 2009, *J. Malíček* (Herb. Malíček no. 2323). – New for the flora of Trentino-Alto Adige.

Bryoria furcellata is a hair lichen usually 3–5(-12) cm long, showing regularly isotomic dichotomous branching, axils usually broad towards base and acute towards tips. It seems to be a well-delimited species characterized by lateral spinules, abundant, fissural soralia which develop tufts of spinules and by the presence of fumarprotocetraric acid (Gilbert and Hawksworth 2009). It has been reported in Italy so far only from Veneto (Nimis et al. 1991) and Friuli Venezia Giulia (Nimis 2016). It is a mainly boreal-montane, circumpolar lichen of the Northern Hemisphere, extending south to Mexico and Central America, apparently rare in the Alps (Nimis et al. 2018).

J. Malíček, S. Ravera

Farnoldia micropsis (A.Massal.) Hertel

+ **VEN**: Arabba (Belluno), near top of mountain 1 km S of Passo Pordoi, on dolomite rock (UTM WGS84: 32T 715995.5151106), 2400 m, 20 July 2009, leg. *J. Malíček*, det. *J. Hafellner* (Herb. Malíček no. 2326). – Species confirmed for the flora of Veneto.

Farnoldia micropsis is a crustose lichen with a white areolate thallus and black apothecia (up to 2 mm wide) adnate or between the areolae, characterized by I+ blue medulla. It is a circumpolar arctic-alpine species, widespread and common throughout the Alps (Nimis et al. 2018) on calcium-bearing rocks. Nevertheless, the only record from Veneto of *F. micropsis* dates back to the second half of the 19th century (Arnold 1876, Hertel 1967).

J. Malíček, S. Ravera

Hypocenomyce stoechadiana Abbassi Maaf & Cl.Roux (Ophioparmaceae)

+ **CAM**: Cratere degli Astroni (Napoli), on bark of *Quercus robur* L. (UTM WGS 84: 33T 428026.4521603) 19 m, 1 November 2016, *D. Puntillo* (CLU No. 17157, 17454, 17466, 17479, 17817, 17818, 17877, 17911). – Species new for the flora of Campania.

Hypocenomyce stoechadiana is a squamulose species with a Mediterranean-Macaronesic distribution, found on ancient specimens of *Olea* L., *Quercus ilex* L., and *Quercus virgiliana* (Ten.) Ten. in warm-humid areas. It has often sterile while at the collection site a large number of thalli is provided with fruiting bodies. According to Nimis and

Martellos (2017), this species shows an exclusively Tyrrhenian distribution in Italy, although in Calabria three populations have been found on the Ionian coast (CLU No. 5672, 5724, 17557). This lichen is classified in the Italian Red List of epiphytic lichens as "Vulnerable" (Nascimbene et al. 2013).

D. Puntillo, I. Catalano, S. Ravera

***Lecania atrynoides* M.Knowles (Ramalinaceae)**

+ TOS: Cala San Quirico, Populonia (Livorno), on siliceous sandstone along the coast (UTM WGS84: 32T 621304.4759203), 3 m, 8 June 2018, *L. Paoli*, *Z. Fačkovcová* (SAV). – Species confirmed for the flora of Toscana.

Lecania atrynoides is a crustose Mediterranean-Atlantic species of siliceous rocks, generally growing in areas with a humid-warm climate, such as Tyrrhenian Italy. In Toscana it was reported only from the island of Capraia (Nimis et al. 1990). The identification of the new specimen from the area of Populonia has also been confirmed by sequencing of internal transcribed spacer (ITS) regions of ribosomal DNA (ITS1-5.8S-ITS2).

L. Paoli, Z. Fačkovcová, A. Guttová

***Paracollema italicum* (B. de Lesd.) Otálora, P.M.Jørg. & Wedin (Collemataceae)**

+ **CAM**: Santuario S.S. Annunziata, Licusati frazione di Camerota (Salerno), on *Olea europaea* L. (UTM WGS84: 33T 530453.4434790), 410 m, 4 April 2010, *S. Ravera* (Herb. Ravera); Pisciotta (Salerno), on *Olea europaea* L. (UTM WGS84: 33T 519127.4440793), 230 m, 22 February 2011, leg. *S. Ravera*, *G. Brunialti*, det. *S. Ravera* (Herb. Ravera); Marina di Pisciotta (Salerno), on *Olea europaea* L. (UTM WGS84: 33T 519798.4439244), 40 m, 22 February 2011, leg. *S. Ravera*, *G. Brunialti*, det. *S. Ravera* (Herb. Ravera). – Species new for the flora of Campania.

It is an epiphytic cyanolichen, which prefers trunks of *Olea*, *Ulmus*, *Quercus ilex* L., and *Quercus pubescens* Willd. in mesophytic woodland and exposed situations, not subjected to direct sunlight. It usually constitutes communities with *Normandina pulchella* (Borrer) Nyl. and several cyanolichens within it dominate (Degelius 1954). In Italy, it is rarely found in the Mediterranean belt. This species is presently known only for a few localities in Lazio (Ravera 2001) and in Puglia (Von Brackel 2011), while it has not been reconfirmed in its *locus classicus* in Genova (Ravera and Giordani 2008). *Paracollema italicum* is included in the Italian Red List of epiphytic lichens as "Endangered" (Nascimbene et al. 2013).

S. Ravera

***Peltigera extenuata* (Vain.) Lojka (Peltigeraceae)**

+ **LOM**: Surroundings of Caruga, Valchiavenna (Sondrio), on a drystone wall covered by mosses (UTM WGS84: 32T 525689.5132912), 1240 m, September 2017, leg. *C. Vallese*, det. *R. Benesperi*, *C. Vallese* (Herb. Benesperi); Nasoncio, Gerola Alta (Sondrio), on a concrete wall covered with mosses at the edge of a secondary road (UTM WGS84: 32T

542796.5102441), 1087 m, 27 August 2019, leg. *G. Gheza*, det. *R. Benesperi*, *C. Vallese* (Herb. Nascimbene No. JN6789, Herb. Gheza). – Species new for the flora of Lombardia.

Peltigera extenuata is a foliose species characterized by a thallus with (mostly) rounded lobes and flocculent and pale rhizines becoming darker in the central part. The peculiar characteristic of this species is the presence of strictly laminal soredia (Goward et al. 1995). It is a terricolous species ,ecologically and morphologically similar to *Peltigera didactyla* (With.) J.R.Laundon, but it differs in having a KC+ red reaction of the medulla and soralia (Nimis 2016). In the past, it was often referred to *Peltigera didactyla* var. *extenuata* (Nyl. ex Vain.) Goffinet & Hastings, but according to Goffinet et al. (2003) this taxon is currently recognised as a species, which has been recently reported for Italy (Matteucci and Vanacore Falco 2015, Ravera et al. 2019).

C. Vallese, G. Gheza, L. Di Nuzzo

***Sarcogyne praetermissa* K.Knudsen & Kocourk. (Acarosporaceae)**

+ **ITALY** (**ABR**): Gran Sasso Massif, pass between Santo Stefano di Sessanio and Campo Imperatore (L'Aquila), limestone, dolomite, Alpine grassland (UTM WGS84: 33T 389500.4693000), c. 1680 m, 6 April 1997, leg. *P.L. Nimis*, *M. Tretiach* (sub *Sarcogyne privigna*), rev. *P.L. Nimis*, 27 January 2020 (TSB No. 27188); Rocca Caramanico (Pescara), on limestone (UTM WGS84: 33T 418500.4661500), c. 1000 m, 12 August 1996, leg. *P.L. Nimis*, *M. Tretiach* (sub *Sarcogyne privigna* v. *calcicola*), rev. *P.L. Nimis*, 27 January 2020 (TSB No. 24943). – Species new for the flora of Italy (Abruzzo).

+ **ITALY** (**MAR**): Sibillini Mnts., Monte Vettore, near Valle Orsara (Ascoli Piceno), on calcareous boulders (UTM WGS84: 33T 362600.4743400), c. 1100 m, 7 August 1996, leg. *P.L. Nimis*, *M. Tretiach* (sub *Sarcogyne privigna*), rev. *P.L. Nimis*, 27 January 2020 (TSB No. 24064). – Species new for the flora of Italy (Marche).

+ **ITALY** (**MOL**): Below Lupara along river Biferno (Campobasso), dry calcareous rocks, cultivations (UTM WGS84: 33T 478566.4621312), c. 280 m, 4 April 1997, leg. *P.L. Nimis*, *M. Tretiach* (sub *Sarcogyne privigna*), rev. *P.L. Nimis*, 27 January 2020 (TSB No. 27080). – Species new for the flora of Italy (Molise).

Sarcogyne praetermissa is a recently-described species which was previously treated as a calcicolous morph of *Sarcogyne hypophaea* (Nyl.) Arnold (syn.: *Sarcogyne privigna* auct., see Nimis 2016), from which it differs in the unsegmented apothecial margins, the stouter paraphyses, and the growth on calcareous substrata (Knudsen and Kocourková 2018, see also Roux et al. 2019). This species, hitherto reported from central and northern Europe, and from Montenegro, seems to be particularly frequent on limestone outcrops along the Adriatic side of the Italian Peninsula, from the submediterranean to the upper montane belt, but is likely to be more widespread, and should be looked for elsewhere.

P.L. Nimis, E. Pittao

***Teloschistes chrysophthalmus* (L.) Th.Fr. (Teloschistaceae)**

+ **PUG**: Bosco Cuturi, Manduria (Taranto) on *Phillyrea latifolia* L. and *Quercus ilex* L. (UTM WGS84: 33T 725580.4469003) and on *Pyrus amygdaliformis* Vill. (UTM

WGS84: 33T 725621.4468806), 93 m, 19 January 2020, *S. Gianfreda* (HERB GM); Bosco Rosamarina, Manduria (Taranto), on *Phillyrea angustifolia* L (UTM WGS84: 33T 726899.4468101), 86 m, 27 January 2020, *G. Matino* (HERB GM); near Sava (Taranto) on *Prunus dulcis* (Miller) D. A. Webb and *Pistacia lentiscus* L. (UTM WGS84: 33T 713504.4472856), 110 m, 28 January 2020, *S. Gianfreda* (HERB GM). – Species confirmed for the flora of Puglia.

Teloschistes chrysophthalmus is a fruticose lichen; it is quite showy due to lobes being orange-yellow to grey, mostly covered with numerous marginal fibrils which are also present around the pedicellate apothecia. This lichen is included in the Italian Red List of epiphytic lichens as "Near-threatened" (Nascimbene et al. 2013). It was much more common in the past and presently it is extinct in many Regions, especially in northern Italy (Nimis 2016). The last record in Puglia dates back to the late 19th century (Jatta 1889). We found some specimens in three localities on different substrates. These lichens grow on twigs of shrubs, on the terminal part, well exposed to the sun, and never found in undergrowth, in association with *Xanthoria parietina* (L.) Th.Fr., *Physcia adscendens* H.Olivier and *Parmotrema hypoleucinum* (J.Steiner) Hale. The density of *T. chrysophthalmus* seems to be extremely limited and its distribution is irregular, probably due to human interference (tree pruning, fires, use of herbicides and fertilizers).

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